

ITEM: 10

SUBJECT: Aquifer Storage and Recovery (ASR) Projects
a. Regulation of ASR Projects in the Central Valley Region, *General Strategy*
b. City of Roseville, Diamond Creek Well, Phase II Demonstration ASR Project, Placer County

BOARD ACTION: *Consideration of Adoption of a Resolution Conditionally Waiving Waste Discharge Requirements*

BACKGROUND: Aquifer Storage and Recovery (ASR) projects are being considered by a number of municipalities to increase their drinking water supplies by injecting surface water into an aquifer during times of abundant supply and extracting that water from the aquifer during times of need. In contrast to other types of conjunctive use projects, ASR projects utilize wells to directly inject treated drinking water into the aquifer. Due to constituents present in the source water and disinfection byproducts formed during chlorine disinfection, the injected drinking water may contain chemical constituents in concentrations that violate one or more water quality objectives for groundwater.

The City of Roseville is exploring the possibility of implementing a conjunctive use ASR project, which would inject treated surface water obtained from Folsom Lake into the groundwater basin underlying Placer County. In preparation for this project, the City completed a Phase I ASR demonstration project in December 2004 under Resolution No. R5-2003-0083 and has submitted a Report of Waste Discharge (RWD) for a second phase of the ASR demonstration study to further assess the feasibility of a full-scale project.

The Phase I project consisted of 26 days of injection at approximately 1,350 gallons per minute (gpm), and approximately 29 days of extraction at approximately 3,400 gpm. The total volume of water injected during Phase I was approximately 158 acre-feet, and the total amount extracted was 439 acre-feet or approximately 278 percent of what was injected. Following extraction, chloroform, dissolved fluoride, and dissolved organic carbon were the only constituents that remained in groundwater at concentrations slightly higher than baseline conditions.

The proposed Phase II ASR project will consist of the following: (a) one month of baseline data collection, (b) injecting 1,094 acre-feet (3.56×10^8 gallons) of treated water at a rate of 1,375 gpm into the aquifer over a six month period using the Diamond Creek Well, (c) storage of the injected water in the aquifer for a period of four months, (d) a ten month extraction phase at 2,500 gpm recovering 3,314 acre-feet (1.08×10^9 gallons) of water, and (e) two months of post testing.

ISSUES:

The first staff report provides general information about ASR projects, their potential for water quality impacts, and regulatory issues. Finally, staff describe a general strategy for regulating these projects. The general regulatory strategy balances the need for increased water supplies with the potential groundwater impacts from conjunctive use projects, and directs the limited Non Chapter 15 staff resources to those projects with the greatest potential to impact water quality.

The second staff report provides specific information pertaining to the Board's consideration of a Resolution conditionally waiving waste discharge requirements for the City of Roseville Diamond Creek Well Phase II Demonstration Aquifer Storage and Recovery Project. Because baseline samples collected from the City's Water Treatment Plant (WTP) show that chlorine residuals, fluoride, chloroform, bromodichloromethane and dichloroacetic acid exceed water quality limits for groundwater, the proposed waiver requires that the City extract a minimum of 300 percent of the volume of water injected into the aquifer to ensure that the injection plume is captured and removed during the recovery cycle. If groundwater impacts are found beyond the anticipated injection front during testing or in the aquifer at the conclusion of the recovery phase of testing, the City must notify the Regional Board within 24 hours and implement its Contingency Plan. This plan will consist of additional groundwater extraction until the monitoring data confirms that the chemical constituents are at concentrations below limits applying their respective water quality objectives. The waiver also requires pre-test monitoring to further characterize the injected water and the groundwater, as well as monitoring during the Injection, Storage, and Recovery (ISR) cycles of the project.

The City has no objections to the proposed waiver and staff recommends that the Board adopt the Resolution conditionally waiving WDRs for the Phase II ASR Demonstration Project.

Mgmt. Review _____
Legal Review _____

5 August 2005 Board Meeting
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670